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INSTITUTE OF GOVERNMENTAL  
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UNIVERSITY OF CALIFORNIA

# **ALTERNATIVE PLANS**

**FOR THE PREPARATION  
OF THE GENERAL PLAN**

**Calaveras County**

11/9/80



8008176



# CALAVERAS COUNTY PLANNING DEPARTMENT

Government Center 891 Mountain Ranch Rd. Telephone (209) 754-3841

SAN ANDREAS, CALIFORNIA 95249

August, 1980

TO THE GENERAL PUBLIC:

The County of Calaveras is currently in the process of revising the County-wide General Plan. This report describes a series of alternative plans for your consideration. While reading the report, we encourage you to fill out the "Work Sheet" on page 3 in order to assist you in your selection of a "perferred plan". Please send us the completed "Work Sheet" by October 15, 1980. Based upon your comments, the Planning Commission and the Board of Supervisors will eventually select a preferred plan among the alternatives.

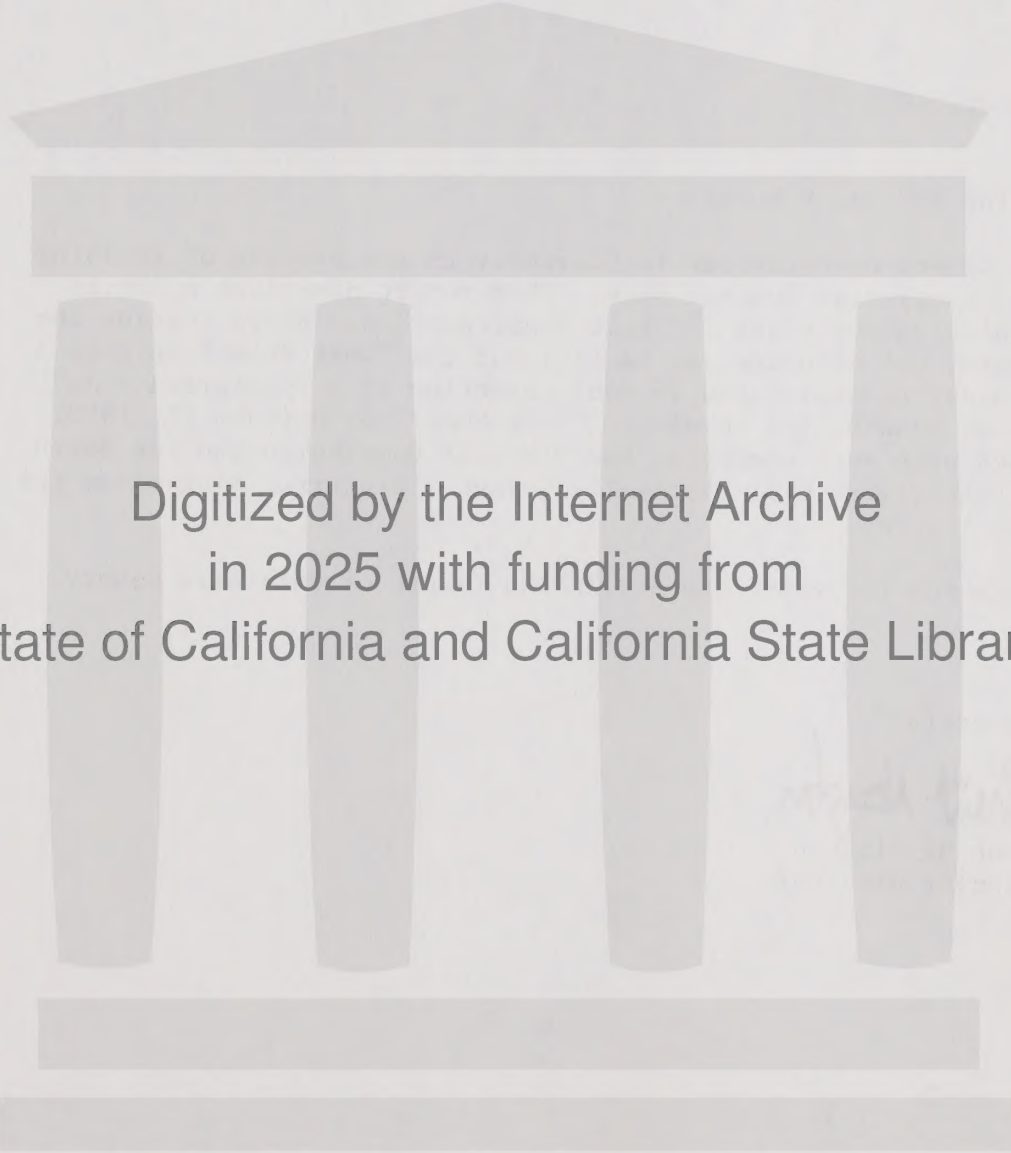
Thank you for your interest in the future of Calaveras County.

Sincerely,

A handwritten signature in dark ink, which appears to read "Brent Harrington". The signature is fluid and cursive.

Brent Harrington  
Planning Director





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ALTERNATIVE PLANS

For The Preparation  
of the General Plan

Calaveras County, August 1980

Prepared By:

Calaveras County  
Planning Department

Brent Harrington, Director

Dennis Dickman, Project Planner

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## PREFACE

### SCOPE OF GENERAL PLAN REVISION

California State law requires that every county and city shall have a comprehensive, long term General Plan for the future development of the county or city. The General Plan is a policy document consisting of nine State mandated elements as follows:

- Land Use Element
- Circulation Element
- Housing Element
- Conservation Element
- Open Space Element
- Seismic Safety Element
- Noise Element
- Scenic Highway Element
- Safety Element

Each of the elements shall be integrated and be internally consistent and compatible.

Calaveras County is currently in the process of updating the major elements of its County-wide General Plan. Specifically, the county is currently updating the Land Use, Circulation, Conservation, and Open Space Elements. A brief definition of each of these elements follows:

The Land Use Element deals with the proposed general distribution, location, and extent of uses of the land.

The Circulation Element deals with the transportation system for the purposes of efficiently transporting goods and the safe and effective traveling of all segments of the population.



The Conservation Element deals with the conservation, development and utilization of natural resources.

The Open Space Element deals with essentially unimproved land and water resources for the purposes of preserving natural areas and providing outdoor recreation.

The Calaveras County General Plan revision, put more concisely, is basically a RESOURCE MANAGEMENT SYSTEM...a system by which both the public and private sectors can begin to more effectively manage, upon a long-term basis, the county's natural, economic, and human resources.

#### GENERAL PLAN REVISION PROCESS

The General Plan revision process will occur over a three-phase program. Phase One is complete and was devoted toward the collection and analysis of information necessary for the development of the General Plan. Four major reports document the findings of Phase One and are entitled as follows. The first 3 reports are available for purchase from the Calaveras County Planning Department.

Attitude Survey Analysis: Calaveras County Planning Department;  
April 1980.

Environmental Resource Analysis: EDAW Inc.; May, 1980

Service Sector Analysis; EDAW Inc.; May, 1980

Overall Economic Development Program - Annual Report: Central  
Economic Development District, June, 1980.

Phase Two of the General Plan revision is devoted toward the development of alternative plans plus the selection of a "Preferred" plan. This report deals with the description and provisions of those alternative plans.

Phase Three will be devoted toward refining and finalizing the "preferred" plan chosen among the alternatives, into an official General Plan policy document for adoption by the County.

Of all three phases of the General Plan revision process, Phase Two is the most critical because during this phase a decision will be made (ultimately by the County Board of Supervisors) which will establish the basic direction of the new county-wide General Plan. Because of the importance of actively involving the general public in this decision, a series of town meetings and official public hearings are scheduled to be held throughout the months of August, September, and October regarding the alternative plans.

## I. INTRODUCTION

Every community, including Calaveras County, has a system for managing its resources and growth. Public attitudes, private decisions, public programs and regulations, taxation programs, sewer and water extension policies, etc., are all factors that shape the future. Yet, most local governments have not effectively mobilized these components into a coordinated management system which is in conformity with local goals. The General Plan revision is the appropriate vehicle to begin such an effort in Calaveras County---it is one of the most long-range programs in the County and allows the public to have a say regarding the future of their community.

### A. Report Organization

An essential first effort in formulating a new General Plan or management system for the future is the formulation of long-range goals. Goals are the ultimate purpose or end toward which an effort is directed, and they basically represent how one would like to see Calavares County in the future. Section II of this report presents a set of tentative General Plan Goals.

The following sections of this report outlines and discusses the pertinent management system components which will eventually comprise the General Plan. Section III summarizes these components under four separate alternative futures for the County. The last three sections of this report discusses each component separately. Section IV focuses upon "Land Capability" or the intrinsic ability of natural resources to support specific uses of the land. Section V focuses upon "Suitability" or the ability of certain basic facilities to support those specific



of the land. Section VI of the report focuses upon the primary "Implementation" programs necessary for the implementation of the General Plan.

## B. Selection of a Preferred Plan

A work sheet follows in order to facilitate your selection of a "Preferred plan" among the alternatives and general recommendations presented in this report.

We encourage you to read the report and then fill-out the work sheet, with any other comments you would like to make, and send them to the Calaveras County Planning Department, Government Center, 891 Mountain Ranch Road, San Andreas, Ca. 95249 before October 15, 1980.

### Future Land Uses

I prefer land capability map:

\_\_\_\_\_ Alternative 1

\_\_\_\_\_ Alternative 2

\_\_\_\_\_ Alternative 3

\_\_\_\_\_ Alternative 4

Additional Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

### Future Open Space Lands

I feel the following should be preserved in public open space:

\_\_\_\_\_ The eight rare plant species.

\_\_\_\_\_ The botanical areas of the Table Mountains.

Future Open Space Lands (Continued)

\_\_\_\_\_ The Copperopolis Mine Tailings.

\_\_\_\_\_ The ecological areas of substrates

\_\_\_\_\_ The ecological areas of disjunct plant species.

\_\_\_\_\_ The Bald Eagle wintering area.

\_\_\_\_\_ The Golden Eagle nesting area.

\_\_\_\_\_ The Heron rookeries.

\_\_\_\_\_ The Turkey Range

The Rail Road Flat Deer....

\_\_\_\_\_ Winter Range

\_\_\_\_\_ Migration Routes

\_\_\_\_\_ Holding Areas

\_\_\_\_\_ Farning Areas

Additional Comments: \_\_\_\_\_

Suitability Criteria

Do you agree with the standards recommended beginning on page 17 which determine minimum parcel sizes for new land subdivisons?

\_\_\_\_\_ Yes

\_\_\_\_\_ No, Specify why not \_\_\_\_\_



Do you agree with the criteria for determining future commercial areas in the County?

\_\_\_\_\_ Yes

\_\_\_\_\_ No, Specify why not \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Do you agree that future industrial uses in the County should be reviewed upon an individual basis rather than designating specific locations for industrial uses?

\_\_\_\_\_ Yes

\_\_\_\_\_ No, Specify why not \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What do you generally feel should be the minimum parcel size of new subdivisions in the part of the County your property is located?

\_\_\_\_\_ acre (s).

Do you feel there should be a buffer zone between surface mining operations and residential areas?

\_\_\_\_\_ No.

\_\_\_\_\_ Yes, the buffer zone should be how wide? \_\_\_\_\_ miles.

Additional Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Implementation Techniques

I feel the following should be used in the implementation of the new General Plan:

\_\_\_\_\_ Special tax treatment for agriculture, grazing, timber, and open space lands.

\_\_\_\_\_ Public acquisition of the open space lands I had previously checked.

\_\_\_\_\_ Zoning.

\_\_\_\_\_ Greater cooperation among County government and the special districts in the County (such as through the Local Agency Formation Commission).

Additional Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

My name is \_\_\_\_\_.

I represent (other than yourself) \_\_\_\_\_

\_\_\_\_\_. I live in (place of permanent residency) \_\_\_\_\_

\_\_\_\_\_.

I (own or do not own property in Calaveras County - specify which)

\_\_\_\_\_. My property (if you own property in

Calaveras County) is located nearest the town of \_\_\_\_\_.

\*\*\*\*\*

TEAR-OUT PAGES 3 THROUGH 6 AND SEND TO THE CALAVERAS COUNTY

PLANNING DEPARTMENT, 891 MOUNTAIN RANCH ROAD, SAN ANDREAS, CA 95249

### C. Definitions

Various terms are used throughout this report that may not be familiar. A definition of these are provided here.

#### "Planning Terms"

Holding Capacity is the measure of an areas ability to accommodate growth and development within limits defined by a specific plan. Holding capacity in this report, expressed in population, is based upon land development areas being built-out or in other words totally built upon in the future.

Local Agency Formation Commission (LAFCO) is a commission comprised of local political representatives with the powers to act upon the incorporation of cities, the formation of special districts, and the annexation of territory and service areas to local agencies.

Development Rights Transfers (TDR's) is a system by which open space lands can be preserved under public management without the expenditure of public monies.

Agricultural Preserve (AP) is a preferential tax treatment program for lands which can produce food or fiber.

Timberland Preserve Zone (TPZ) is a preferential tax treatment program for timber producing lands.

Insurance Services Offices (ISO) Ratings is a classification system with respect to a community's fire defenses.



## "Land Use Definitions"

Land Development are those areas of the County for residential, commercial, and industrial uses.

Agriculture are those areas of the County for growing crops.

Grazing are those areas of the County capable of extensive range use.

Timber and Forest Uses are those areas of the County capable of timber growing and/or areas of general recreational and scenic value.

Open Space and Recreation are those areas of the County that have exceptional recreational or scenic value and/or support significant botanical and wildlife areas.

Mineral Extraction are those areas of the County that contain commercially valuable mineral resources.

"Significant Botanical and Natural Areas" (For a more detailed description refer to the Environmental Resource Analysis report).

Rare or Endangered Plants include Henderson's bent grass, Ione Manzanita, Tuolumne coyote-thistle, Delta coyote-thistle, Amador rush-rose, Whipple monkey-flower, and Rimo's perideridia.

Table Mountain natural area is an extensive area of ancient lava flows which supports a variety of unique plant life.

Copperopolis Mine Tailings area contains unique plant species which have evolved on the toxic substrates of the tailings.

Unusual Substrates Ecological Areas consists of exposed limestone and clays which support unique plant communities.

Disjunct Populations Ecological Areas are plant communities which are typically found at higher elevations but occur in low elevations having favorable micro-climates.

"Wildlife Habitats" (For a more detailed description refer to the Environmental Resource Analysis report).

Avian Habitats of significance include the Bald Eagle wintering areas, Golden Eagle nesting areas, Heron rookeries and turkey range.

Deer Habitats of significance include the Rail Road Flat deer wintering range, migration routes, and holding and fawning areas.

## II. GENERAL PLAN TENTATIVE GOALS

Goals are the ultimate purpose or end toward which an effort is directed. A set of tentative goals follows which may represent the ultimate purposes of the General Plan.

These tentative goals were presented to the public in a series of town meetings in May and are again presented here. Eventually, they will become part of the Official General Plan document after further public review and comment.

### RESOURCES

Overall Policy: Effectively manage, upon a long-term basis, the County's natural, economic, and human resources.

#### Natural Resource Goals:

##### "Land Resources"

- Preserve and enhance lands in the County that have exceptional recreational and scenic value and/or that support unique plant and wildlife.
- Maintain lands in the County that are required for the protection of public health, safety, and welfare such as watersheds and unstable soil areas.
- Promote the use of land in the County to its highest natural capability for supporting agriculture, grazing, timber harvesting, mineral extraction, and land development.

##### "Air Resources"

- Maintain and enhance air quality and clarity in the County.



## "Water Resources"

- Preserve and enhance water resources in the County that have exceptional recreational and scenic value and/or that support unique plant fish, and wildlife.
- Promote the appropriate development of water resources in the County for domestic and irrigation uses as well as the generation of hydro-electric power.

## "Energy Resources"

- Promote the conservation of non-renewable energy supplies and the use of renewable energy resources found within the County such as hydro, solar, wind, and biomass (such as wood).

## Economic Resource Goals:

- Promote growth in all sectors of the County's local economy including the tourism and recreation industry, forest products, mineral extraction, agriculture, construction, and other private business development.
- Seek to maintain and improve the County's basic infrastructures (transportation system, water distribution systems, waste disposal systems, and energy supply systems) necessary for continued economic growth.

("Economic Resource Goals" - Continued)

- Seek to provide the highest level of public facilities and services within the County at the lowest possible cost.

Human Resource Goals:

- Increase employment opportunities in the County by attracting labor-intensive industries and businesses.
- Increase year-round job opportunities in order to reduce both seasonal and chronic unemployment in the County.

QUALITY OF LIFE

Overall Policy: Preserve and enhance the County's natural, historic, and rural character.

Natural Character Goal:

- Preserve and enhance the County's dominant landscape character of savannah foothills and forested mountain slopes.

Historic Character Goal:

- Preserve and enhance the County's rich historical character including areas of archeological importance and gold rush architecture.

Rural Character Goal:

- Preserve and enhance the County's rural character

(Rural Character Goal - continued)

by maintaining the identity of individual towns and promoting lower density development in areas outside of town sites.

PUBLIC SECTOR ROLE

Overall Policy: Assure a harmonious and cooperative effort among the public sector and the private sector in the realization of all County-wide goals.

Public Sector Goals:

- Encourage and assure the full participation of citizens in the County government decisions that affect the future of their communities and property.
- Streamline County government regulatory and permit processes and where possible develop positive incentive programs instead of controlling techniques.
- Maximize the private sector's freedom of choice.

### III. SUMMARY OF ALTERNATIVES

Presented here are four alternative futures for Calaveras County. Each of the alternatives include future land use and transportation systems as well as identification of some of the major techniques that would be used in implementing each alternative. The individual components of the alternatives are discussed separately and in more detail in the following sections of this report.

#### A. Alternative 1

Alternative 1 places a high emphasis upon future agriculture, grazing, and timber uses in the County and a low emphasis upon new land development areas and open space and recreational lands.

This Alternative could conceivably accomodate approximately 77,000 persons or more than three times the County's current population.

#### 1. Future Land Uses

##### "Land Development"

New land development would occur on existing subdivided property, or, in other words, upon the County's current 22,000 vacant parcels of land. The allowable density of development would be determined by parcel size as exists today.

New commercial development in the County would be primarily focused within existing town sites. Future commercial uses would be required to be within a 1/2 mile radius of a large town and an 1/8 mile radius of a small town. Also, future commercial uses would be required to have direct access to a



State Highway or major County road.

New industrial areas in the County would not have designated locations but rather would be reviewed upon an individual basis.

#### "Agriculture"

Agricultural uses in the County would be expanded significantly beyond today's level. Minimum parcel size of agricultural lands would be 80 acres. The ability of bringing large amounts of this land into agricultural production would be dependent upon the availability and reasonable cost of irrigation water. Due to the reduction of urban and rural expansion under this Alternative, preferential tax treatment through agricultural preserves should be reevaluated.

#### "Grazing"

Grazing uses in the County would remain as one of the primary land uses. Grazing uses would also probably serve as an interim use in intensive agricultural areas until water became available to these areas. Minimum parcel size for grazing land would be 160 acres. As mentioned previously, agricultural preserve taxation treatment should be reevaluated due to the limits to urban and rural expansion under this Alternative.

#### "Timber and Forest Uses"

Timber growing and harvesting uses in the County would also continue to be a primary use under this Alternative. Minimum parcel size for timber lands would be 160 acres. Again, due to lack of new urban and rural expansion under this alternative, preferential tax treatment through timberland protection zoning

should be reevaluated.

#### "Open Space and Recreation"

The primary open space lands under this alternative are existing parks and reservoirs. The only new open space lands are the various locations of eight rare or endangered plant species. It is envisioned that these locations, comprising approximately 250 acres would be brought under public management possibly with the assistance of Federal and State governments and/or private nature organizations.

#### "Mineral Extraction"

Future mineral extraction areas of commercial value are not readily identifiable at this time. These areas though would be protected from encroachment of non-compatible land uses by virtue of the provisions of this alternative not allowing further small parcel land development.

### 2. Transportation System

The County's current transportation or roadway system, under this alternative, would be capable of serving the increases in population without major road improvements. The only exception to this would be Highway 4 from Angels to Arnold which would need to be improved to a four lane facility.

Also, a limited public transit system, consisting of two routes, is included under this alternative.

### 3. Organizational Arrangement

The management of the County's resources and growth under

Alternative 1 could conceivably continue to be conducted by County government and the various special districts and agencies without any particular form of increased coordination beyond that which exists today.

B. Alternative 2

Alternative 2 places a moderate emphasis upon future agriculture, grazing, and timber uses, as well as a moderate emphasis upon new open space and recreation lands. This alternative places a low to moderate emphasis upon new land development areas.

Alternative 2 could conceivably accomodate a population or "holding capacity" of 190,000 persons or approximately an eight-fold increase above the County's current population.

1. Future Land Uses

"Land Development"

New land development areas shown on Alternative 2 increase by approximately 106,000 acres above that shown on Alternative 1. The allowable density of development or, in other words, the minimum parcel size would be determined by the availability of water, sewage disposal, fire protection, and major roadways as follows:

Urban Settlements (less than 5 acre parcels):

Less than 1 acre parcels must have:

..Municipal water

..Municipal sewer

..Fire protection of an ISO rating of 8 (fire hydrants)

or better

..Continuous collector roads\*

1 acre to less than 5 acre parcels must have:

..Municipal water

..Individual waste disposal systems (such as septics)  
or Municipal sewer

..Fire protection of an ISO rate of 8 (fire hydrants)  
or better

..Continuous collector road

Rural Settlements (5 to 40 acre parcels):

5 acre to less than 20 acre parcels must have:

..Municipal water or well water in areas of high  
groundwater potential

..Individual waste disposal systems or Municipal sewer

..Fire protection of an ISO rating of 8 (fire hydrants  
or tanker truck systems)

..Continuous collector roads

20 acre to less than 30 acre parcels must have:

..Municipal water or well water in areas of high  
or moderate groundwater potential

..Individual waste disposal systems or Municipal sewer

..Fire protection of an ISO rating of 9 (tanker truck  
system)

30 acre to 40 acre parcels must have:

..Municipal water or well water in areas of high,  
moderate, or low groundwater potential

..Individual waste disposal systems or Municipal sewer

---

\* A continuous collector road is defined as an improved road (standards) to be determined based upon the number and size of lots served) which provides access from a subdivision to a major County road or State Highway.

..Fire protection of an ISO rating of 9 (tanker truck system)

Future commercial and industrial uses in the County would be provided for as described in Alternative 1.

#### "Agriculture"

Future agricultural uses in the County under Alternative 2 are generally areas of prime agricultural soils. Minimum parcel size of agricultural lands again would be 80 acres. Also, the ability of bringing large amounts of this land into agricultural production would be dependent upon the availability and reasonable cost of irrigation water. Preferential tax treatment through Agricultural Preserves would likely continue under this alternative.

#### "Grazing"

Future grazing lands in the County under Alternative 2 are generally comprised of prime grazing soils. Again, grazing uses would probably serve as an interim use in future intensive agricultural areas until irrigation has become available. Minimum parcel size for grazing lands would be 160 acres. Agricultural Preserves for grazing lands would likely continue under this alternative.

#### "Timber and Forest Uses:

Timber growing and harvesting uses in the County under this alternative are generally comprised of prime timber producing areas. Minimum parcel size for timber lands would be 160 acres and the use of preferential tax treatment through



Timberland Preserve Zones (TPZ) would likely continue under this alternative.

#### "Open Space and Recreation"

The primary open space lands in the County under Alternative 2 are again primarily existing parks and reservoirs. New open space lands include the locations of eight rare or endangered plant species, the bald eagle wintering area at Salt Springs Valley Reservoir, the golden eagle nesting area, and the Rail Road Flat deer fawning areas. It is envisioned that these new open space lands, that are not currently under public management, would be purchased for public ownership. They include approximately 12,000 acres.

#### "Mineral Extraction"

Future mineral extraction areas of commercial value are not easily identifiable at this time. Where mineral resource locations are known though, a mineral assessment would be necessary before any future "land development" uses could occur in these areas.

## 2. Transportation System

The County's current transportation system would probably not be capable of adequately serving the population of this alternative without major improvements to roads and public transit. These improvements would probably be of a magnitude between Alternatives 1 and 4.

### 3. Organization Arrangements

The management of the County's resources and growth under Alternative 2 would conceivably require greater coordination and cooperation between County government and the various districts and agencies in the County than exists today. Therefore, the Local Agency Formation Commission (LAFCO) would begin performing a larger role in the management of future development.

### C. Alternative 3

Alternative 3 places a moderate to high emphasis upon future land development and a moderate emphasis upon agriculture, grazing, and timber uses, as well as upon new open space and recreation lands.

This alternative could conceivably accomodate approximately 242,000 persons (holding capacity) or an eleven fold increase above the County's current population.

#### 1. Future Land Uses

##### "Land Development"

Land development areas shown on Alternative 3 represent approximately 242,000 acres of land. The minimum parcel size of new land development would be determined based upon the availability of water, sewage disposal, fire protection, and major roadways. The development standards outlined under Alternative 2 would likewise apply under this alternative.

Future commercial and industrial uses in the County would be provided for as described in Alternative 1.

#### "Agriculture"

Future agricultural uses in the County in this Alternative are generally areas of prime agricultural soils. Minimum parcel size of agricultural lands would be 80 acres. Again, the availability of irrigation water would largely determine the amount of land in actual agricultural production. Preferential tax treatment through Agricultural Preserves would continue under this alternative given the large amount of land development expansion.

#### "Grazing"

Future grazing lands under Alternative 3 are comprised generally of prime grazing soils. Grazing uses again would probably serve as an interim use in future agricultural areas until irrigation water was available. Minimum parcel size for grazing lands would be 160 acres and would be eligible for Agricultural Preserve Tax Treatment.

#### "Timber and Forest Uses"

The growing and harvesting of timber under this Alternative are comprised of areas which generally are prime timber producing areas. Minimum parcel size for timber lands would be 160 acres. The use of preferential tax treatment through Timberland Preserve Zones (TPZ) would continue

under this alternative.

#### "Open Space and Recreation"

The open space lands under Alternative 3 include existing as well as new lands. New open space lands include the locations of the eight endangered plant species; the bald eagle wintering areas at Salt Springs Valley Reservoir, the golden eagle nesting area, and the Rail Road Flat deer fawning areas and holding areas. It is anticipated that these new open space lands, that are not currently under public management, would be brought into public control. They include approximately 13,000 acres of land.

#### "Mineral Extraction"

Future Mineral extraction areas of commercial value are not easily identifiable at this time. As in the previous alternative, where mineral resource locations are known, a mineral assessment would be necessary before future land development could occur in these areas.

### 2. Transportation System

The County's current transportation system would not be capable of adequately serving the population of this alternative without major improvements to roads and public transit. These improvements would probably be of a magnitude between Alternatives 1 and 4.

### 3. Organizational Arrangements

The management of the County's resources and growth under

Alternative 3 would require effective coordination and co-operation between County government and the various special districts and agencies in the County. The Local Agency Formation Commission (LAFCO) would perform to a large extent a management role regarding future development in the County.

D. Alternative 4

Alternative 4 places a high emphasis upon future land development and open space lands and a low emphasis upon agriculture, grazing, and timber uses.

This alternative could conceivably accomodate approximately 357,000 persons (holding capacity) living within the County.

1. Future Land Uses

"Land Development"

Land development areas shown on Alternative 3 represent approximately 357,000 acres of land or 55% of the entire County. The minimum parcel size of new land development would be determined based upon the availability of water, sewage disposal, fire protection, and major roadways as well as solar access. The development standards outlined under Alternative 2 would likewise apply under this Alternative. In addition, land development areas with other than southern exposures would be limited to a minimum parcel size of 5 acres.



Future commercial and industrial uses in the County would be provided for as described in Alternative 1 plus with the provision of establishing new commercial centers.

#### "Agriculture"

Future agricultural uses in the County in this alternative are confined to areas of prime agricultural soils. Minimum parcel size of agricultural lands would be 80 acres. Preferential tax treatment through Agriculture Preserves would continue under this Alternative given the large amount of land development expansion.

#### "Grazing"

Future grazing areas under Alternative 4 are basically residual areas mostly consisting of north slopes and steep slopes over 50%. Minimum parcel size for grazing lands would be 160 acres. Agricultural Preserve tax treatment would continue to be applied to these lands.

#### "Timber and Forest Uses"

The growing and harvesting of timber under this Alternative are comprised of areas which generally have prime timber producing soils. Minimum parcel size for timber lands would be 160 acres and the use of Timberland Preserve Zones (TPZ) would continue under this Alternative.

#### "Open Space and Recreation"

The open space lands under Alternative 4 include existing as well as many new lands. The substantial population of

this Alternative would warrant the need for additional recreational areas as well as added protection for significant botanical and wildlife areas. New open space lands include the locations of the eight endangered plant species, the two natural areas of the Table Mountains and the Copperopolis Mine Tailings, and two potentially significant ecological areas containing substrates and disjunct plant communities. New open space lands also include the bald eagle wintering area, golden eagle nesting area, heron rookeries, turkey range, and Rail Road Flat deer herd habitats. These new open space lands, not currently under public management, are anticipated to be brought under public ownership. They comprise approximately 64,000 acres of land. Given the large amount of acreage and the potential sum of public money required to purchase these lands, the use of Transfer of Development Rights (TDR's) may be applicable whereby no public monies are involved. (Refer to Section VI for a further description of TDR's).

#### "Mineral Extraction"

Future mineral extraction areas of commercial value are not easily identifiable on the map at this time. As in previous Alternatives, where mineral resource locations are known, a mineral assessment would be necessary before future land development could occur in these areas.

2. Transportation System

The transportation system necessary to serve the population of Alternative 4 would consist of a greatly improved roadway network and public transit system. Almost all existing State Highways and major County roads would need to be improved to 4 to 6 lane facilities. Also, under this Alternative it is conceivable to have a full fledged bus service within the County.

3. Organizational Arrangements

The management of the County's resources and growth under Alternative 4 would require effective coordination among County Government, newly formed incorporated Cities, and the various special districts and agencies within the County. The Local Agency Formation Commission (LAFCO) would perform a major management role regarding future development in the County.

#### IV. LAND CAPABILITY

Land capability is defined as the intrinsic ability of natural resources to support specific uses of the land. Four alternative land capability maps are contained in this section of the report. Each alternative is a direct outgrowth of the environmental resource analysis\* conducted during Phase One of the General Plan revision process.

Each alternative land capability map is comprised of five major land use categories: Land Development; Agriculture; Grazing; Timber and Forest Uses; and Open Space and Recreation. These land use categories are shown for all property within the County despite current ownership or management of lands. Also, mineral extraction uses are not shown on the maps because mineral resources of commercial value have not yet been identified in Calaveras County by the State geologist. Mineral extraction uses are, though, discussed in the following section of this report.

Land Development are those areas of the County for residential, commercial, and industrial uses. Land development is further sub-divided by urban settlement and rural settlement categories.

"Urban settlements" are places where density of built-upon land provides an urban sense and/or contains parcels of land of primarily less than 5 acres in size.

The urban settlement pattern is the same on each alternative land capability map and represents existing areas.

Only through the application of suitability criteria

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\* Environmental Resources Analysis; EDAW, Inc., May 1980.

(Land Development - continued)

(Section V of this report) will future urban settlements be defined.

"Rural Settlements" are areas which contain parcels of land from 5 acres to no more than 40 acres in size.

Agriculture are those areas of the County for growing crops. The agriculture land use is non-specific in terms of the type of agricultural crop but would include such crops as irrigated pasture, hay crops, row crops, orchards, vineyards and others that require irrigation and other farming practices to produce a crop.

Grazing are those areas of the County capable of extensive range use.

Timber and Forest Uses are those areas of the County that are capable of timber production and harvesting and areas of general recreational and scenic value.

Open Space and Recreation are those areas of the County that have exceptional recreational and scenic value and/or support significant **botanical** and wildlife areas.

Each land capability alternative includes: (1) a verbal description; (2) a map, (3) the natural resource elements which form the basis upon which the land use map is drawn; and (4) a discussion of the transportation system required to support the future land uses.

The maps show the five alternative future land uses throughout



(Land Development - continued)

the County that are supportable by specified natural resources. It is very important to keep in mind that the maps do not represent a picture or plan of the future. A "plan" is formed only through the combination of a preferred land capability map, suitability criteria (Section V), and implementation techniques (Section VI).

A. ALTERNATIVE LAND CAPABILITY 1

1. Description (refer to accompanying map).

This land capability map places a high emphasis upon agriculture, grazing, and timber land uses in the future. It places a low emphasis upon new land development areas and upon new open space and recreational lands.

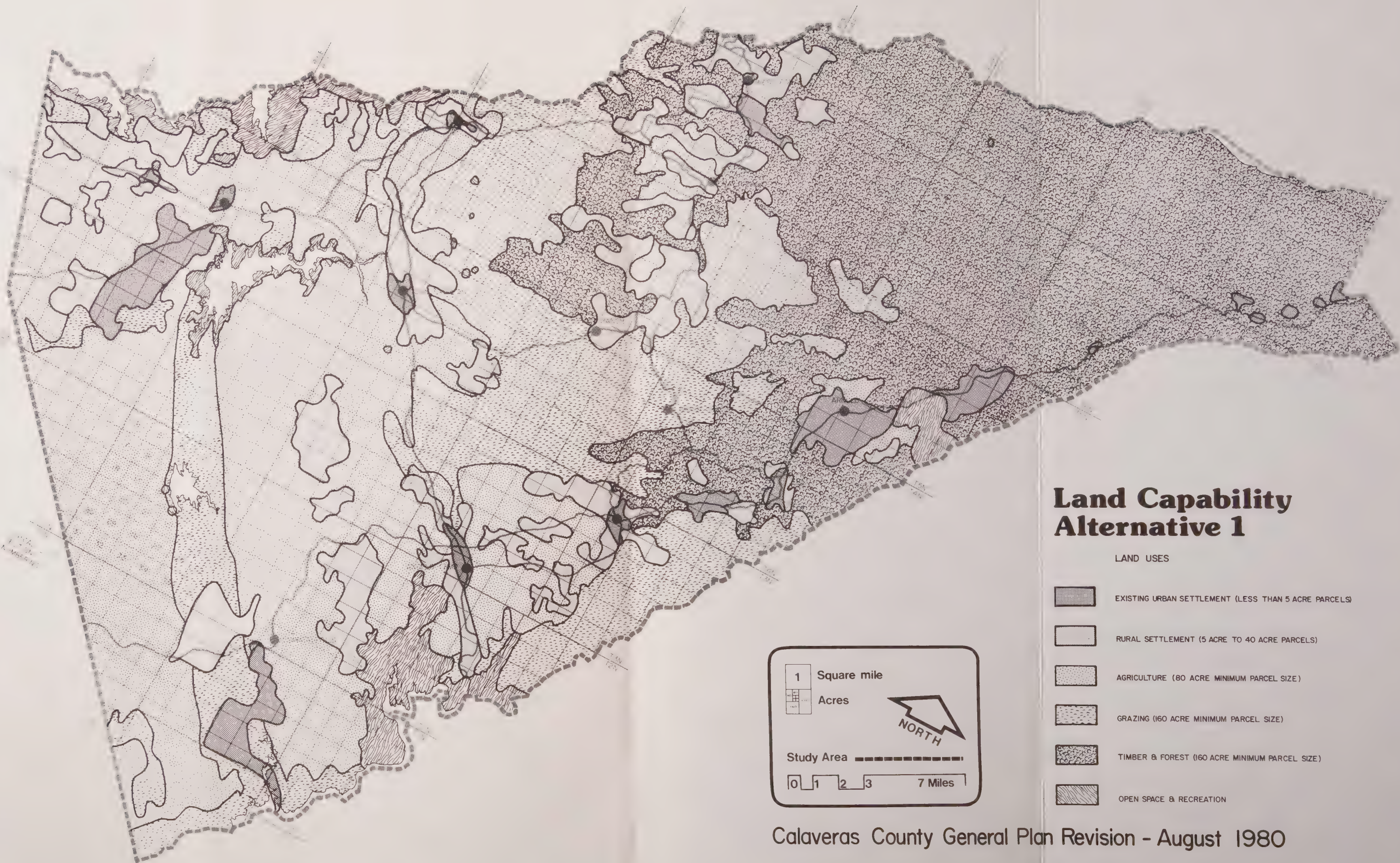
The distribution of future land uses for this alternative are displayed in the following table.

Table 1: Future Land Uses - Alternative Land Capability 1

<u>Land Use</u>	<u>Acreage</u>	
Land Development	84,000	
Urban Settlement		25,000
Rural Settlement		59,000
Agriculture	190,000	
Grazing	143,000	
Timber and Forest	203,000	
Open Space and Recreation	<u>32,000</u>	
	652,000	







Land development areas shown on this alternative primarily represent what exists today. Therefore, no new areas of the County would be subdivided for future land development. All future growth would occur within the County's existing development pattern. Given





## Land Capability Alternative 1

### LAND USES

-  EXISTING URBAN SETTLEMENT (LESS THAN 5 ACRE PARCELS)
-  RURAL SETTLEMENT (5 ACRE TO 40 ACRE PARCELS)
-  AGRICULTURE (80 ACRE MINIMUM PARCEL SIZE)
-  GRAZING (160 ACRE MINIMUM PARCEL SIZE)
-  TIMBER & FOREST (160 ACRE MINIMUM PARCEL SIZE)
-  OPEN SPACE & RECREATION

1 Square mile

Acres



Study Area

0 1 2 3 7 Miles

Calaveras County General Plan Revision - August 1980





that there are over 22,000 vacant parcels of land within the County, the large majority of which are located within the existing land development pattern, this alternative could still support more than a tripling of the County's population. The County's current population of 21,600 persons could be conceivably increased to 77,000 persons under this land capability alternative.

Agriculture, grazing, and timber and forest uses would remain as the largest users of land within the County accounting for 82% of the County's land area.

Open Space and Recreation Uses would be confined primarily to existing parks and reservoirs.

The County's current transportation or major roadway system would be capable of serving the population increases under this alternative without major improvements. The only exception would be Highway 4 from Angels to Arnold which, based upon projected traffic, would need to be improved to four lanes. Also a public transit system is considered under this alternative.

## 2. Natural Resource Elements.

The natural resource elements which form the basis upon which the Alternative Land Capability Map 1 is drawn is as follows:

"Open Space and Recreation" areas shown on the capability map include Big Trees State Park and Camanche, Pardee, New Hogan, and New Melones reservoirs, as well as small scattered locations where eight rare or endangered plant species are found. The common name for these eight plants are Henderson's bent grass, Ione Manzanita, Tuolumne coyote-thistle, Delta coyote-thistle, Amador rush-rose, Whipple monkey-flower, and rimo's perideridia.

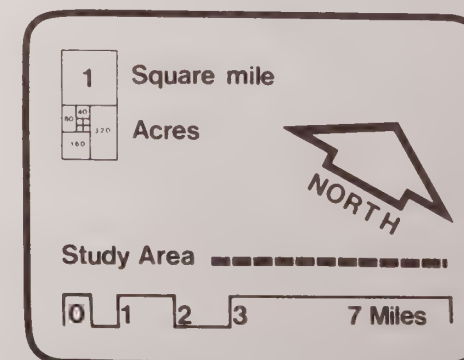
"Land Development" areas shown on the capability map are existing areas where there are concentrations of parcels of land with 40 acres or less in size.

"Agriculture" areas shown on the capability map are rather liberal. They are based upon soil characteristics and include areas where soil depth is at least one (1) foot deep, not over 50% in slope, have moderate to good drainage, have slight to moderate erosion hazard, and generally include loam, gravel, sandy, and clay soil textures.

"Timber" areas shown on the capability map are based upon soil and climatic characteristics. They include areas which have a commercial timber site index of low to extremely high and range from slight to very high erosion hazard. Timber harvesting is considered to be a somewhat compatible use to wildlife habitats such as the Rail Road Flat deer wintering range, migration routes, holding areas, and fawning area. These wildlife habitats are shown as timber areas on the capability map.

"Grazing" areas shown on the capability map are based upon soil and climatic characteristics. They include areas of both moderate to very high grazing site classes. Grazing is considered to be a somewhat compatible use to wildlife habitats and some significant botanical areas. The bald eagle wintering areas, golden eagle nesting areas, heron rookeries, and part of the deer wintering range are shown as grazing areas on the capability map. Also, natural areas such as Table Mountains and the Copperopolis mine tailings, and potentially significant ecological areas, such as unusual substrates and disjunct plant populations; are shown as grazing areas on the





## Roadway Network Alternative 1

- 6 LANE EXPRESSWAY**  
(LIMITED ACCESS)
- 4 LANE EXPRESSWAY**  
(LIMITED ACCESS)
- 4 LANE ROAD**
- 2 LANE ROAD**





capability map.

### 3. Transportation System (refer to map)

The transportation system of Alternative 1 would consist primarily of the County's roadway network and possibly some type of public transit system.

The County's current roadway network, including the State Highways, could accommodate the projected growth and associated increases in traffic\* without any major improvements, with the exception of Highway 4. Within Angels and from Angels to east of Arnold, Highway 4 would need to be improved to a four-lane facility based upon projected traffic volumes.

A report regarding Unmet Transit Needs Determination was recently prepared as part of the Calaveras County Public Transportation Study. The report, prepared by CALTRANS for the Calaveras County Transportation Commission, is the second of three reports to be prepared. The report recommends that a bus system be implemented along two fixed routes in the County, plus it features route deviation service for the physically handicapped. The proposed transit routes would be from West Point to Valley Springs via San Andreas and from Arnold to Mountain Ranch via San Andreas. San Andreas would serve as a transfer point between the two service routes. The report also recommends that the system be operated by a private transit operation under contract with the County.

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\* An analysis of future traffic assignments was done for Alternative 1 and 4 by CALTRANS. The methodology of this analysis is contained within the APPENDIX of this report.

## B. Alternative Land Capability 2

### 1. Description (refer to accompanying map)

This land capability map places a low to moderate emphasis upon land development uses in the future. It places a moderate emphasis upon agriculture, grazing, and timber uses, as well as upon new open space and recreational lands.

The distribution of future land uses for this alternative are displayed in the following table.

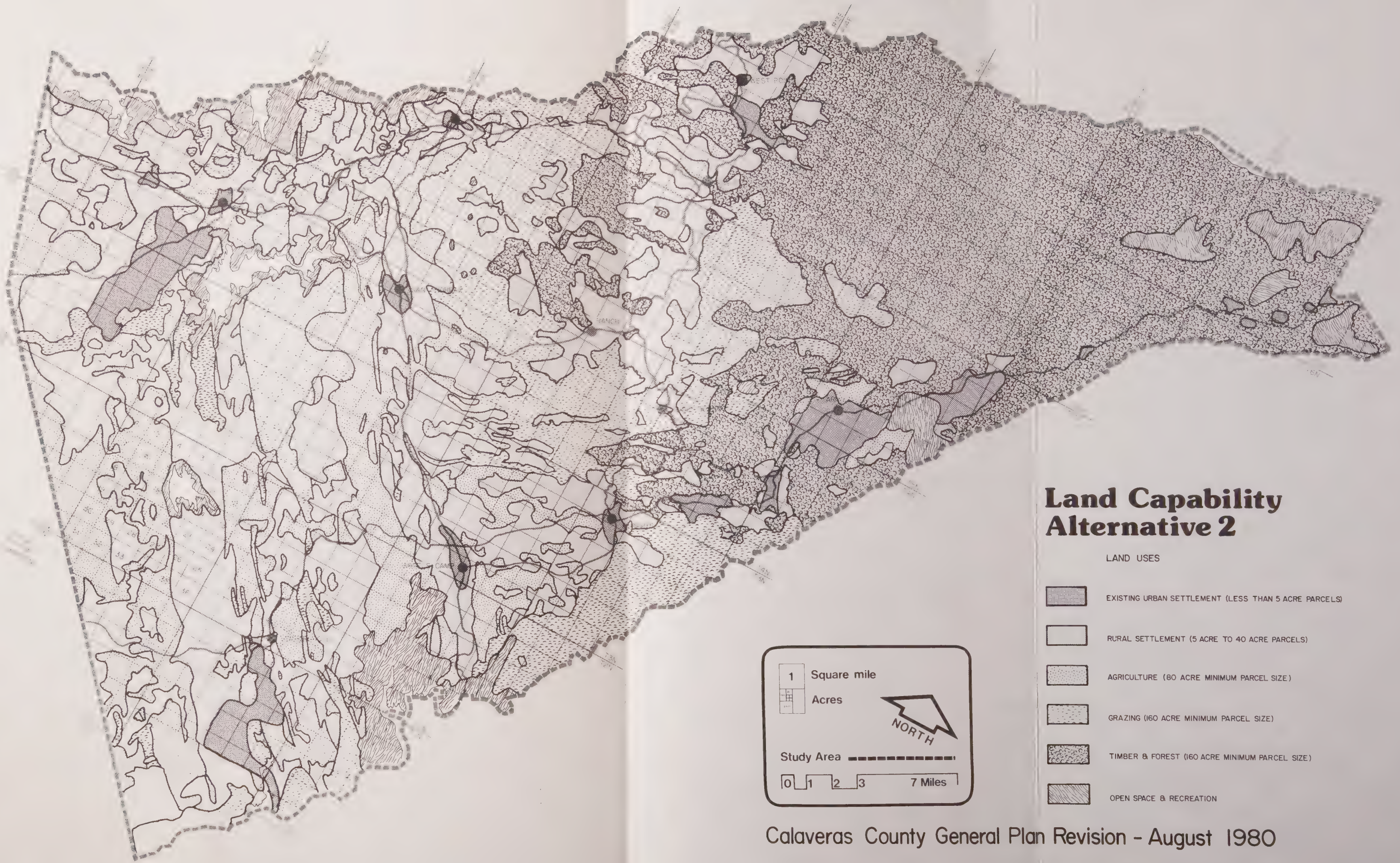
Table 2: Future Land Uses - Alternative Land Capability 2

<u>Land Use</u>	<u>Acreage</u>	
Land Development	190,000	
Urban Settlement		25,000
Rural Settlement		165,000
Agriculture	103,000	
Grazing	126,000	
Timber and Forest	173,000	
Open Space and Recreation	<u>60,000</u>	
	652,000	

Land development areas shown on this alternative increase by approximately 106,000 acres above that shown on Alternative 1.







(Note: This increased acreage occurs in the rural settlement category, even though, as noted before, most of it may actually occur as urban settlement dependent upon meeting the suitability criteria discussed in the next section of this report). Assuming an overall average parcel size of 2.5 acres in the land development area and 2.5 persons per household, under this land capability alternative the County's "Holding Capacity" could be 190,000 persons. This represents over an eight-fold increase above the County's current population.

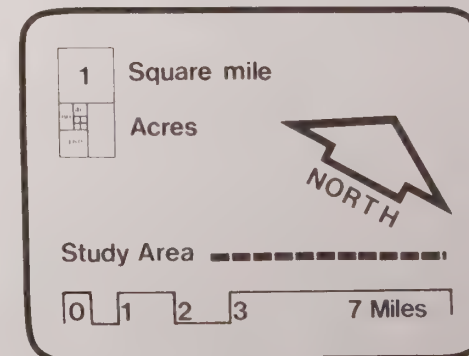




## Land Capability Alternative 2

### LAND USES

-  EXISTING URBAN SETTLEMENT (LESS THAN 5 ACRE PARCELS)
-  RURAL SETTLEMENT (5 ACRE TO 40 ACRE PARCELS)
-  AGRICULTURE (80 ACRE MINIMUM PARCEL SIZE)
-  GRAZING (160 ACRE MINIMUM PARCEL SIZE)
-  TIMBER & FOREST (160 ACRE MINIMUM PARCEL SIZE)
-  OPEN SPACE & RECREATION







Agriculture, grazing, and timber and forest uses would still remain the largest user of land in the County accounting for 62% of the County's land area.

Open Space and Recreation uses would expand to include an additional 28,000 acres. This additional open space land would largely provide protection for significant botanical and wildlife areas while also securing additional public recreational areas.

The County's current transportation system would probably not be capable of serving the population increases under this alternative without major improvements to roads and public transit.

## 2. Natural Resource Elements

The natural resource elements which form the basis upon which the Alternative Land capability map 2 is drawn follows.

"Open Space and Recreation" areas shown on the capability map include existing as well as new areas. Existing areas include Big Trees State Park and Camanche, Pardee, New Hogan, and New Melones reservoirs. New areas include both significant botanical and wildlife areas. The eight rare or endangered plant species which are discussed under Alternative 1 also appear in this alternative as open space lands. In addition, three wildlife habitats would come under open space classifications. They are the Salt Springs Valley reservoir which is a bald eagle wintering area, the golden eagle nesting area, and the Rail Road Flat deer fawning areas.

"Agriculture" areas shown on the capability map are again based upon soil characteristics. They generally include areas where soil

depth is at least 2 feet deep, not over 30% in slope, have good drainage, have slight erosion hazards, and are all loams or loamy texture.

"Timber" areas shown on the capability map are based upon soil and climatic characteristics. They include areas which generally have a commercial timber site index of medium to extremely high and range from slight to moderate erosion hazard. As mentioned earlier, timber harvesting is a somewhat compatible use to wildlife habitats. Therefore, on the capability map, part of the Rail Road Flat deer wintering range, and all of the migration routes, and holding areas are shown as timber uses.

"Grazing" areas shown on the capability map are again based upon soil and climatic characteristics. They include generally areas of high to very high site classes. Grazing is considered to be a somewhat compatible use to wildlife habitats and some significant botanical areas. Part of the Rail Road Flat deer wintering range and natural areas such as table mountains and the Copperopolis Mine Tailings, and potentially significant ecological areas such as unusual substrates and disjunct plant populations, are shown as grazing areas on the capability map.

"Land Development" areas shown on the capability map are those areas which are not prime agriculture, grazing, or timber areas and have excellent slope/aspect characteristics. Land development areas are shown only in areas which have slopes of 30% or less and which have southern exposures.

### 3. Transportation System

Time did not permit the analysis of traffic volumes or the development of a roadway system for this alternative. Generally speaking though, the amount of roadway improvements and extent of a public transit system necessary to adequately serve the population under Alternative 2 would fall between that described for Alternative 1 and 4.

### C. Alternative Land Capability 3

#### 1. Description (refer to accompanying map).

The land capability map places a moderate to high emphasis upon land development uses in the future. It places a moderate emphasis upon agriculture, grazing, and timber uses, as well as upon new open space and recreation lands.

The distribution of future land uses for this alternative are displayed in the following table:

Table 3: Future Land Uses - Alternative Land Capability 3

<u>Land Use</u>	<u>Acreage</u>	
Land Development	242,000	
Urban Settlement		25,000
Rural Settlement		217,000
Agriculture	61,000	
Grazing	104,000	
Timber and Forest	171,000	
Open Space and Recreation	<u>74,000</u>	
	652,000	

Land Development areas shown on this alternative increases by approximately 158,000 acres above that shown on Alternative 1 and

52,000 acres above that shown on Alternative 2. (Note: This increased acreage occurs in the rural settlement category, even though, as noted previously, most of it may actually occur as urban settlement dependent upon meeting the suitability criteria discussed in the next section of this report). Assuming an overall average parcel size of 2.5 acres in the land development area and 2.5 persons per household, under this land capability alternative the County's "holding capacity" could be 242,000 persons. This represents approximately an eleven-fold increase about the County's current population.

Agriculture, grazing, and timber and forest uses would account for 42% of the County's land area.

Open Space and Recreation uses would expand to include an additional 42,000 acres above today's acreage. This additional open space land would largely provide protection for significant botanical and wildlife areas while also securing additional public recreational areas.

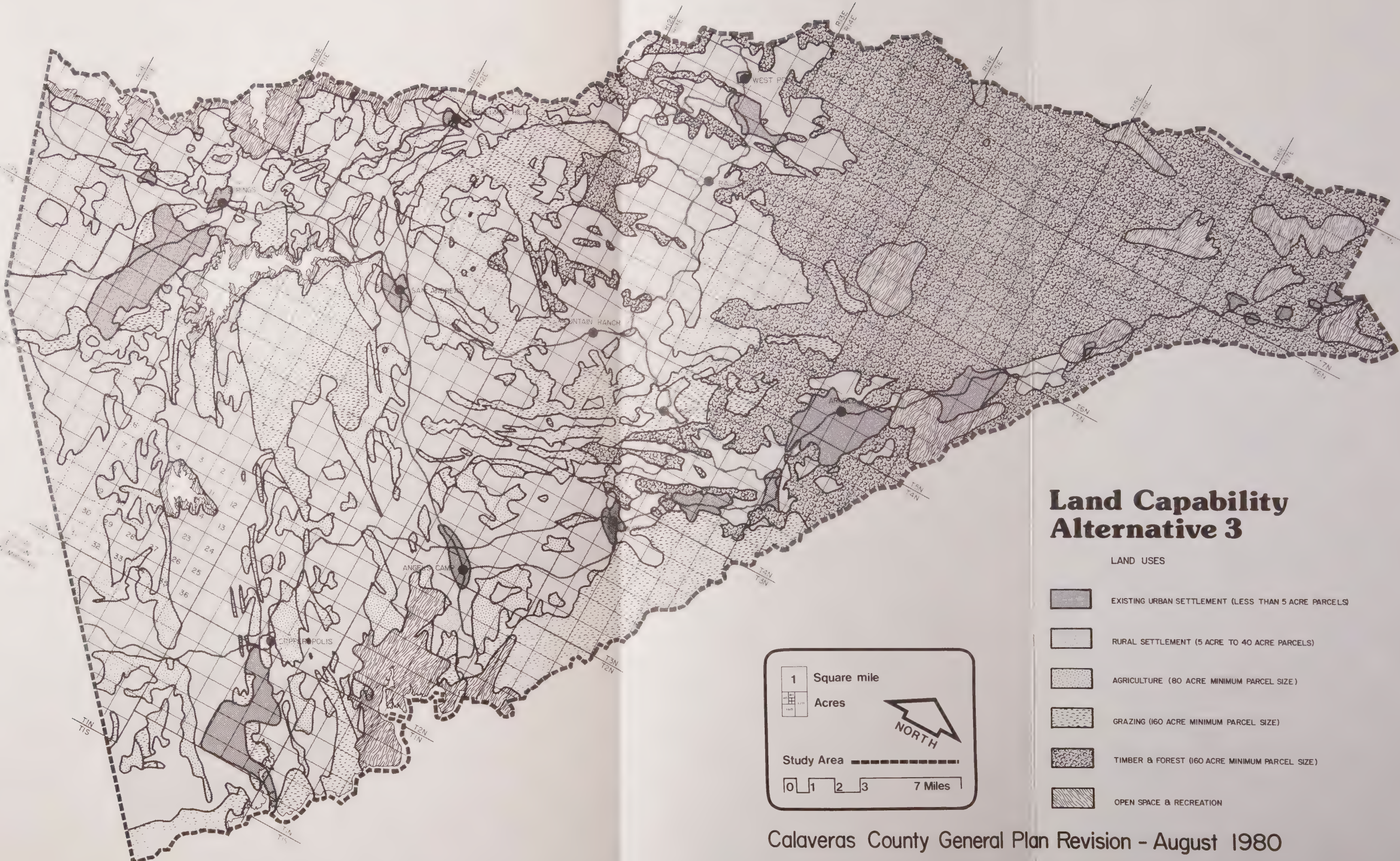
In order to adequately serve the population under Alternative 3, the County's transportation system would require substantial improvements in terms of roads and public transit services.

## 2. Natural Resource Elements

The natural resource elements which form the basis upon which the Alternative Land Capability map 3 is drawn follows.







"Open Space and Recreation" areas shown on the capability map include existing as well as new land. Existing areas include Big Trees State Park and Camanche, Pardee, New Hogan, and New Melones reservoirs. New areas include both significant botanical and wildlife areas. The eight rare or endangered plant species which are identified under

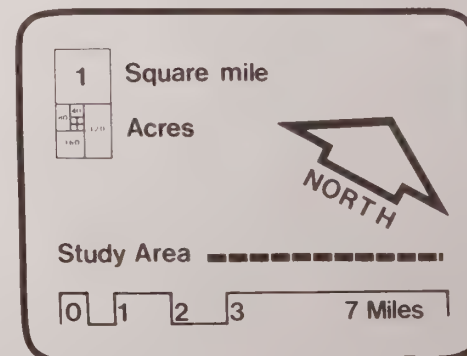




## Land Capability Alternative 3

### LAND USES

-  EXISTING URBAN SETTLEMENT (LESS THAN 5 ACRE PARCELS)
-  RURAL SETTLEMENT (5 ACRE TO 40 ACRE PARCELS)
-  AGRICULTURE (80 ACRE MINIMUM PARCEL SIZE)
-  GRAZING (160 ACRE MINIMUM PARCEL SIZE)
-  TIMBER & FOREST (160 ACRE MINIMUM PARCEL SIZE)
-  OPEN SPACE & RECREATION







Alternative 1 also appear in this alternative as open space lands. In addition, four wildlife habitats would come under open space classifications. They are the Salt Springs Valley reservoir which is a bald eagle wintering area, the golden eagle nesting area, the Rail Road Flat deer fawning areas, and the Rail Road Flat deer holding areas.

"Agriculture" areas shown on the capability map are again based upon soil characteristics. They generally include areas where soil depth is at least 2 feet deep, not over 30% in slope, have good drainage, have slight erosion hazards, and are all loams or loamy texture.

"Timber" areas shown on the capability map are based upon soil and climatic characteristics. They include areas which generally have a commercial timber site index of medium to extremely high and range from slight to moderate erosion hazard. As mentioned earlier timber harvesting is a somewhat compatible use to wildlife habitats. Therefore, on the capability map part of the Rail Road Flat deer wintering range, and all of the migration routes, and holding areas are shown as timber uses.

"Grazing" areas shown on the capability map are again based upon soil and climatic characteristics. They include generally areas of high to very high site classes. Grazing is considered to be a somewhat compatible use to wildlife habitats and some significant botanical areas. Wildlife habitats that are given a grazing use include part of the Rail Road Flat deer wintering range. Significant botan-

ical areas that are given a grazing use include Table Mountains and the Copperopolis Mine Tailings, and potentially significant ecological areas such as unusual substrates and disjunct plant populations.

"Land Development" areas shown on the capability map are those areas which are not prime agriculture, grazing, or timber areas and have moderate slope/aspect characteristics. Land development areas are shown only in areas which have slopes of 50% or less and which have southern exposures.

### 3. Transportation System

Time did not permit the analysis of traffic volumes or the development of a roadway system for Alternative 3. Generally, the extent of improvements to the roadway system and public transit system necessary to adequately serve the population under this Alternative would fall between that described for Alternative 1 and 4.

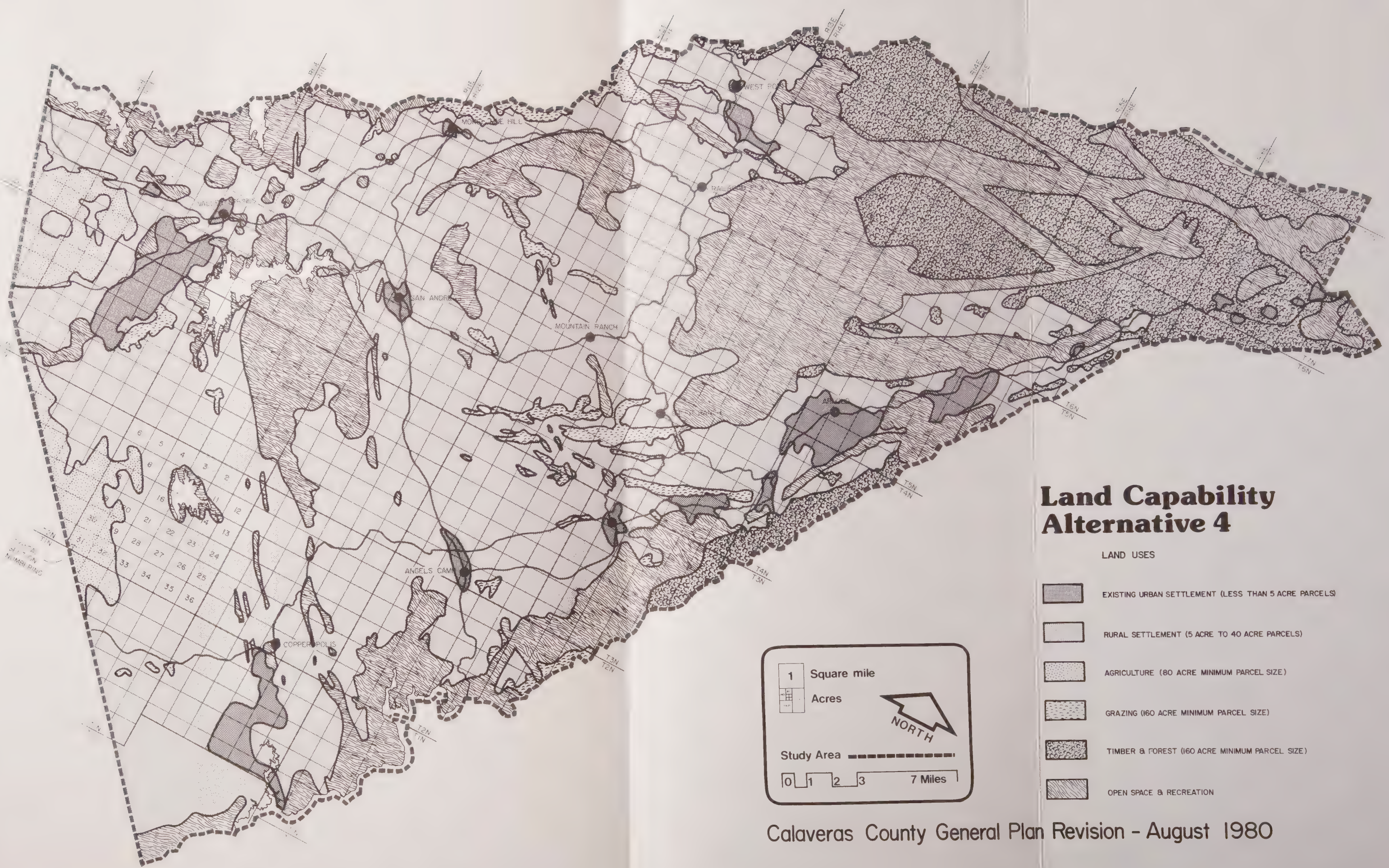
## D. Alternative Land Capability 4

### 1. Description (refer to accompanying map).

The land capability map places a high emphasis upon land development and open space uses in the future. It places a low emphasis upon agriculture, grazing, and timber uses.







The distribution of future land uses for this alternative are displayed in the table on the following page.






## Land Capability Alternative 4

### LAND USES

-  EXISTING URBAN SETTLEMENT (LESS THAN 5 ACRE PARCELS)
-  RURAL SETTLEMENT (5 ACRE TO 40 ACRE PARCELS)
-  AGRICULTURE (80 ACRE MINIMUM PARCEL SIZE)
-  GRAZING (160 ACRE MINIMUM PARCEL SIZE)
-  TIMBER & FOREST (160 ACRE MINIMUM PARCEL SIZE)
-  OPEN SPACE & RECREATION

1 Square mile

Acres



NORTH

Study Area

7 Miles





Table 4: Future Land Uses - Alternative Land Capability 4

<u>Land Use</u>	<u>Acreage</u>	
Land Development	357,000	
Urban Settlement		25,000
Rural Settlement		332,000
Agriculture	19,000	
Grazing	11,000	
Timber and Forest	83,000	
Open Space and Recreation	<u>182,000</u>	
	652,000	

Land Development areas shown on this alternative increase by approximately 273,000 acres, 167,000 acres, and 115,000 acres above that shown on Alternatives 1, 2, and 3 respectively. (Note: This increased acreage occurs in the rural settlement category, even though as noted before, most of it may actually occur as urban settlement dependent upon meeting the suitability criteria discussed in Section V of this report). Assuming an overall average parcel size of 2.5 acres in the land development area and 2.5 persons per household, under this land capability alternative the County's "holding capacity" could be 357,000 persons.

Agriculture, grazing, and timber and forest uses would account for only 17% of the County's land use.

Open space and recreation uses would significantly expand to include an additional 150,000 acres above today's acreage. This additional open space land would provide additional public recreational areas and provide protection for significant botanical and wildlife areas.

The required improvements to the County's transportation system under this alternative would be substantial. To adequately serve the 357,000 population under this alternative a greatly improved roadway network and extensive public transit system would be required.

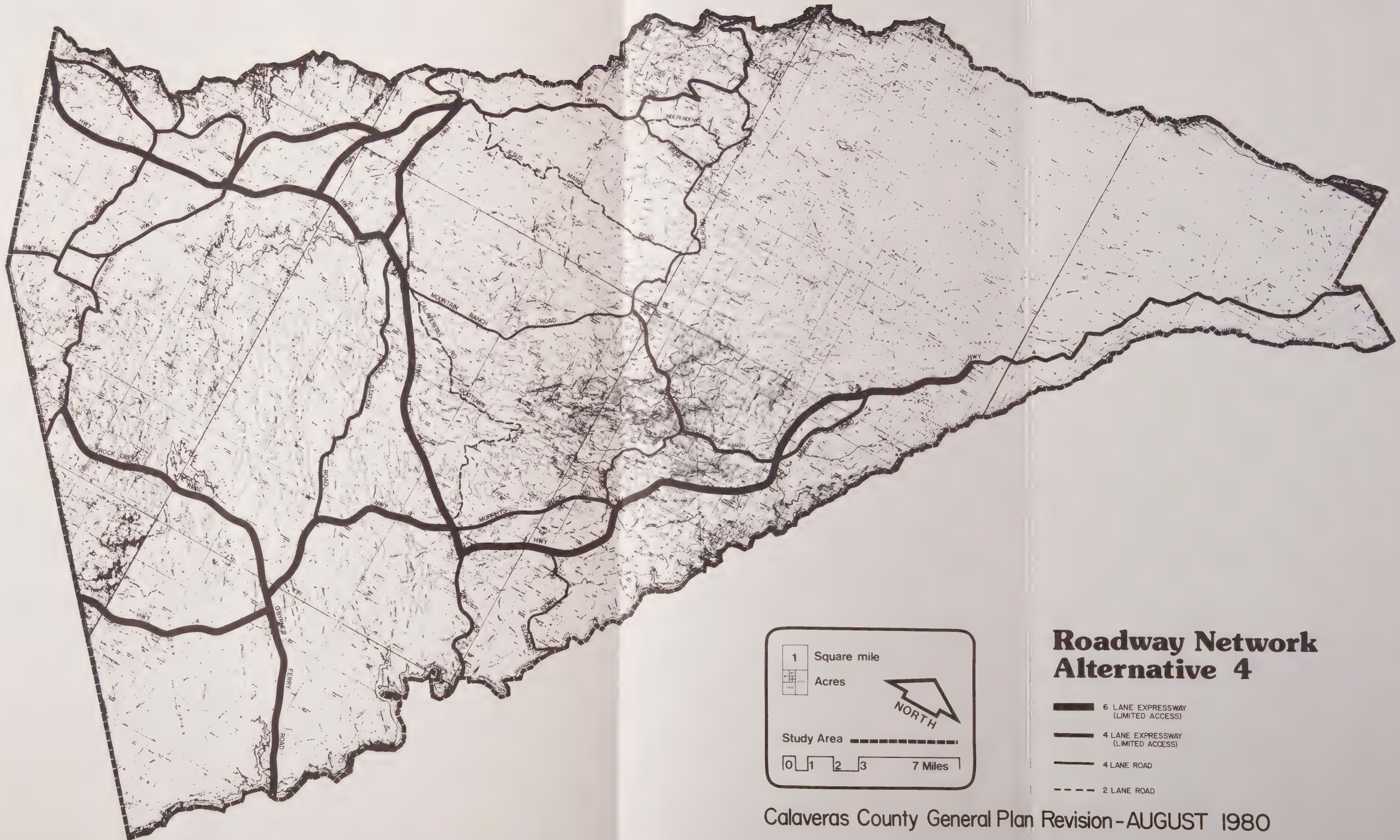
## 2. Natural Resource Elements

The natural resource elements which form the basis upon which the Alternative Land Capability Map 4 is drawn follows.





"Open Space and Recreation" areas shown on the capability map include existing as well as substantial new lands. Existing areas include Big Trees State Park and Camanche, Pardee, New Hogan, and New Melones reservoirs. New areas include all significant botanical and wildlife areas within the County. Significant botanical areas are comprised of the eight rare plant species, two natural areas (Table Mountains and the Copperopolis Mine Tailings), and two potentially significant ecological areas (unusual substrates and disjunct plant populations). Significant wildlife areas are comprised of the bald eagle wintering areas, golden eagles nesting area, heron rookeries, turkey range, and the Rail Road Flat deer wintering range, migration routes, holding areas, and fawning area.

"Land Development" areas shown on the capability map are those areas which are not prime agriculture and timber areas and have low to moderate slope/aspect characteristics. Land development areas are shown in areas which have slopes of 50% or less and which have good and only moderate solar access. Moderate solar access areas are east and west facing slopes and north facing slopes with not greater than a 30% slope.





## Roadway Network Alternative 4

-  6 LANE EXPRESSWAY  
(LIMITED ACCESS)
-  4 LANE EXPRESSWAY  
(LIMITED ACCESS)
-  4 LANE ROAD
-  2 LANE ROAD





"Agriculture" areas shown on the capability map are those areas where soil depth is at least 2 feet deep, not over 30% slope, have good drainage, have slight erosion hazards, and are all loams or loamy textured soils.

"Timber" areas shown on the capability map are generally areas which have a commercial timber site index of high to extremely high.

"Grazing" areas shown on the capability map are basically residual areas mostly consisting of north slopes and steep slopes generally over 50%.

### 3. Transportation Systems (refer to map).

The transportation system necessary to serve the population of Alternative 4 would consist of a greatly improved road network and public transit system.

In order to carry projected traffic\*, almost all existing two-lane State Highways and County arterial roads would need to be improved either up to 4-6 lane expressways (divided roads with controlled access) or to 4 lane arterials. Only a few County roads would remain as 2 lane paved arterials.

Also, it is conceivable that a full-schedule bus service with extensive service routes would be necessary under this Alternative.

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\* Future traffic assignments were done for this alternative by CALTRANS. The methodology of this analysis is contained within the APPENDIX of this report.

## V. SUITABILITY CONSIDERATIONS

The previous section of this report described alternative futures for the County based upon emphasizing certain types of land uses. Each of these Alternatives is based upon the capability of the land to support specific uses. This section of the report deals with "suitability", defined as the ability of basic facilities (such as water and sewage disposal systems) to support those uses of the land.

It is important to keep in mind that the "Suitability" of specific land uses will change through time based upon improvements to and expansion of these basic facilities. In comparison, "land capability" is virtually fixed through time based upon given natural resource locations.

Of the five major land use categories displayed on the Alternative Land Capability Maps, three (Grazing, Timber and Open Space) are primarily dependent upon natural resources. Of course each of these, in order to produce food or fiber or provide natural habitats and recreational opportunities, must have proper management practices.

The remaining two major land use categories (Agriculture and Land Development) are dependent upon both natural resources and man-made facilities. Therefore, suitability considerations are devoted only to these two major land use categories.

As mentioned in the previous section of this report, future mining or mineral extraction uses were not able to be mapped at this time. Suitability considerations are addressed, though, in this section regarding future mining in the County.

#### A. Agricultural Land Uses

As described in the land capability section of this report, future agricultural land uses are non-specific in terms of crops and are based upon known locations of specific soil characteristics.

Some crops currently grown in the County are dry farming crops (such as walnuts) while others require irrigation (such as row crops ) Therefore, the suitability of growing crops of the irrigable type is dependent upon the availability and cost of water. It should be noted that some crops such as grapes can withstand higher water costs than other crops .

The extent of future agricultural lands in the County is largely dependent upon the provision of irrigation water at reasonable costs. The cost of irrigation water is primarily tied to two factors. The first factor is the higher price of water that can be afforded by land development uses which tends to increase overall water prices. The second factor is the cost of delivering the water from the original source to the end-users. Unless gravity flow systems are possible, a large part of the delivery costs is attributed to energy costs for pumping. These costs will continue to increase over time as long as pumping energy is derived from non-renewable sources of energy. Only when renewable sources of energy are deployed for pumping will such costs become maintainable.

Lower water costs can also be achieved by subsidizing irrigation water.

In conclusion, the suitability of bringing large amounts of land in the County into agricultural production may be dependent upon the availability of irrigation water at reasonable costs.

B. Mineral Extraction\*

The extraction of minerals has been and will continue to be an essential part of the County's economy. In regards to the General Plan, the suitability of mineral extraction falls into three main subject areas: (1) mineral resource conservation; (2) land reclamation; and (3) compatibility with other land uses.

1. Mineral Resource Conservation

The production and conservation of minerals are essential to the needs of society. Lands containing commercial valued minerals are often threatened by incompatible uses. An objective of the Surface Mining and Reclamation Act of 1975 is to insure that mineral deposits of significance are available when needed and their extraction is not precluded by other uses of the land. With this intent in mind, the State Geologist in conjunction with the State Mining and Geology Board are

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\* Mineral extraction does not include the processing of minerals. Mineral processing in this report is considered to be an industrial use.

classifying mineral resource lands of statewide or regional significance in California. Such areas will be classified into Mineral Resource Zones (MRZ). To date, the State has not conducted detail studies or designated any Mineral Resource Zones in Calaveras County. Therefore, a comprehensive assessment and determination of significant mineral lands in the County will most likely not be made until after adoption of the County's General Plan.

To assure essential mineral lands are preserved, it is proposed that a "mineral assessment" would be required by the County before future land development could occur in locations of known mineral resources. This would at least assure the conservation of significant mineral lands during the interim time before a comprehensive mineral classification system is developed for the County.

## 2. Land Reclamation

The primary purpose of reclamation is to mitigate the effects on the environment and to protect the public health and safety on mined lands. In addition, land reclamation does permit the reuse of mineral lands after mining is completed. Reclamation provisions more specifically are for control of soil erosion, flooding, waste disposal, and protection of water quality and watersheds. In concert with the Surface Mining and Reclamation Act of 1975, the County currently requires any person engaged



in surface mining to file and have approved a reclamation plan.

### 3. Compatible Land Uses

#### The California Surface Mining and Reclamation Policies

and Procedures published by the Division of Mines and

Geology in June, 1979 identifies compatible and incom-

patible uses with mining operations and mineral lands.

Compatible uses include open space and recreation, agri-

culture, grazing, extensive industrial uses, and resi-

dential uses with minimum parcel sizes of 10 acres.

Incompatible uses include residential areas with smaller

than 10 acre parcel sizes, commercial, intensive

industrial, and public facilities.

In order to minimize the potential conflicts between

mineral lands and these incompatible uses the following

suitability criteria regarding buffer zones would apply

to all four Alternative plans.

#### Mineral Extraction - Suitability Criteria

All new mining operations shall be located no

less than .25 miles\* from any of the previously

identified incompatible uses.

All new land development which contain any of

the previously identified incompatible uses shall

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\* This buffer zone could be shortened if measures are taken to mitigate noise, dust, vibration, and visual impacts of the mining operation.

be located no closer than .25 miles to significant mineral lands.

### C. Urban and Rural Settlement

As described in the land capability alternative section of this report, future urban and rural settlement land uses are based upon existing settlement locations plus different natural resource considerations. This section of the report discusses alternative criteria for: (1) determining the suitability of future settlement uses in terms of the availability of basic facilities (such as water, roads, etc.); and (2) determining the suitability of future settlement areas for specific land uses (such as commercial and industrial areas).

#### 1. Basic Facilities Criteria

Urban and Rural settlements place the greatest demand upon basic facilities in comparison to other land use types. A host of public facilities and services are required and demanded by urban and rural land development. The most essential ones at the General Plan level are water availability, sewage disposal, roadways, fire protection, and schools. For each of these, "suitability criteria" are discussed.

It is also important to note that these essential facilities do not act independently of each other. For example, to attain a certain level of fire protection a municipal water/hydrant system may be required. Likewise, adequate roads

are necessary to allow access for school buses. Only through the combined application of suitability criteria will new land development areas be adequately served by a basic level of facilities and services.

It is essential to keep in mind that new land development areas in the County will be identified only through the combined application of the land capability map and the following suitability criteria. In order for a proposed land development to receive approval it must meet both conditions of "land capability" and "suitability".

In the case of a proposed land development meeting the capability test but not the suitability test because the basic facilities are not currently available, the developer may build or contribute funds to build these facilities.

#### "Water Availability"

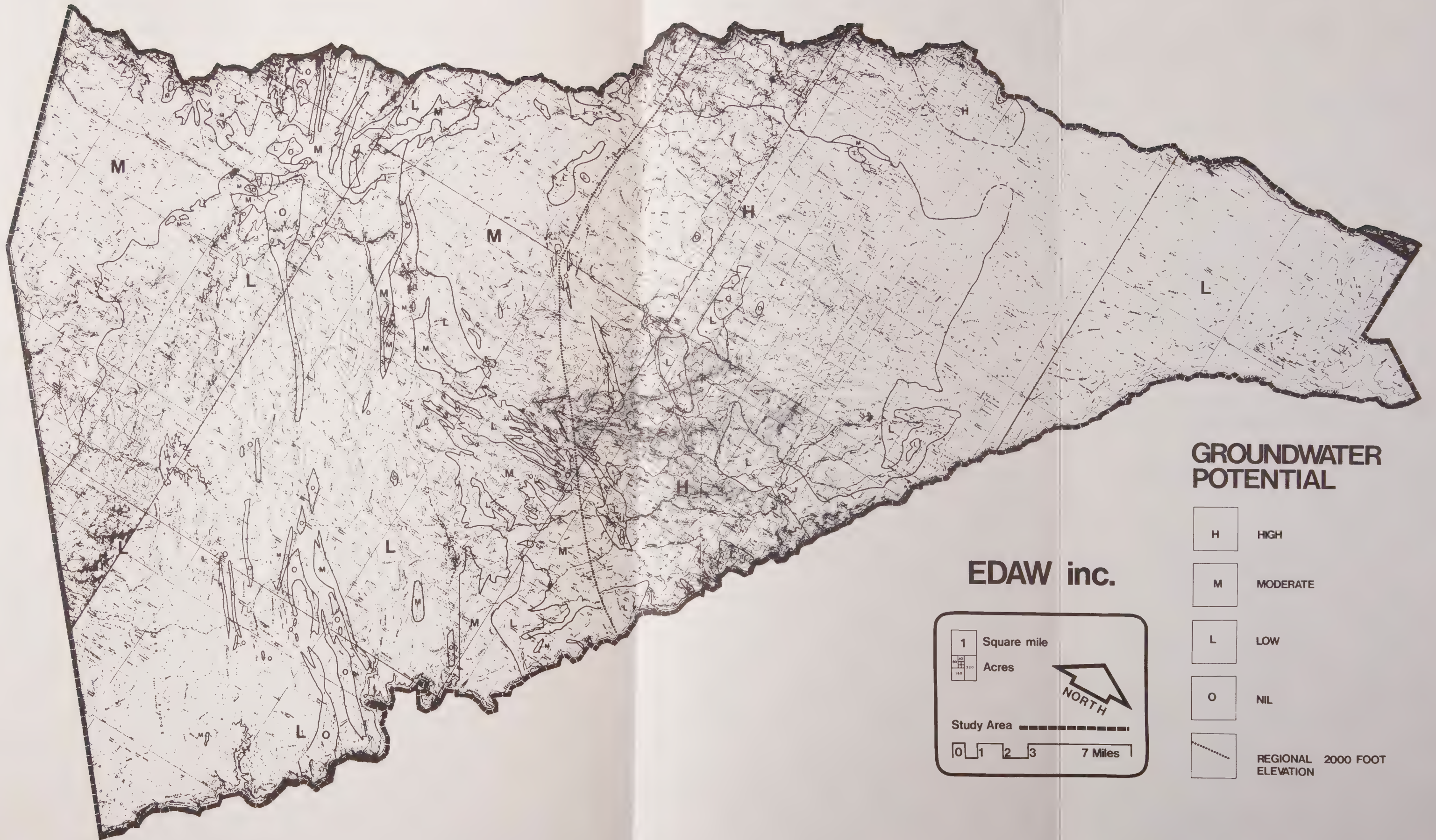
Urban and rural settlements normally derive their water supplies from either groundwater wells or municipal water supply systems.

The County of Calaveras was categorized into areas of high, medium, low, and nil groundwater potential based upon well production characteristics in different bedrock geologic units and the potential for full seasonal recharge of the groundwater system.\* (Refer to accompanying

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\* Environmental Resource Analysis for preparation of the General Plan, Calaveras County, EDAW Inc., May, 1980





## GROUNDWATER POTENTIAL

H

HIGH

M

MODERATE

L

LOW

O

NIL

REGIONAL 2000 FOOT ELEVATION

EDAW inc.



1 Square mile

160 Acres



Study Area

0 1 2 3 7 Miles





map). Areas of high groundwater potential are not considered to be a constraint to future land development. Moderate areas of groundwater potential also are not considered to be a constraint to land development except to small parcel developments which rely upon individual wells. Areas of low groundwater potential are considered to be a constraint to land development relying upon well system because these areas generally have low water yields and/or are drought prone. Nil groundwater potential areas are generally areas with highly mineralized water quality characteristics and, therefore, are also considered to be a constraint to land development.

The following suitability criteria for future urban and rural settlements, relative to water supplies, is based upon the above information. Only if a municipal water system is available and installed could a proposed development have parcel sizes below the minimum established.

Water Supplies - Suitability Criteria,  
Urban and Rural Settlements

<u>Groundwater Potential Areas</u>	<u>Minimum Parcel Size</u>
High	5 acres to less than 20 acres
Moderate	20 acresto less than 30 acres
Low	30 acres to 40 acres
Nil	Municipal Water System Required

## "Sewage Disposal"

Urban and rural settlements normally dispose of sewage by individual systems or municipal systems. Individual systems normally include septic tanks, new waste disposal systems are now also under consideration. Municipal systems include systems which collect, treat, and dispose of treated effluent.

On June 6, 1980, Calaveras County adopted Ordinance #1285 which establishes provisions for the disposal of sewage. The ordinance provides for the establishment of rules and regulations, which to date are in only draft form. The draft requirements for waste disposal for new land developments pertain to subdivisions having 100 lots or more or any subdivision which may threaten water quality, contribute to water pollution, or threaten public health. The main provisions of these regulations require that soil profiles and percolation tests be conducted and minimum system design criteria met. The regulations do not relate the type of sewage disposal system to minimum parcel sizes.

Given the relatively poor soil/slope characteristics in the County for the operation of septic systems, parcel sizes from 1 acre to 5 acres could be required in many cases to comply with the provisions and intent of the County's sewage disposal ordinance. The following suitability criteria for future urban and rural settlements,

relative to sewage disposal, is based upon this general level of information as well as the fact that groundwater is used for domestic water supplies and therefore, is susceptible to pollution from septic systems. Only if a municipal sewer system or self-contained waste disposal system (such as composting toilets) are available and installed could a proposed development have parcel sizes below the minimum established.

Sewage Disposal - Suitability Criteria,  
Urban and Rural Settlements.

<u>Domestic Water/ Sewer System</u>	<u>Minimum Parcel Size</u>
Municipal Water/Septic	1 acre
Well Water/Septic	5 acres

"Roadways"

The roadway system within Calaveras County serves as the primary means of transportation and will likely continue to do so in the future. Land development impacts the roadway system at generally two levels: first, the "arterial" level which is comprised of the State highways and major County roads; secondly, the "collector" level which is comprised of both County and private roads which normally provide direct access to property.

The "arterial" level of roadways are discussed under the land capability section of this report. The "collector" level of roadways are currently under study



by the County's Department of Public Works.

The Public Works Department is developing road standards for eventual incorporation into an ordinance. The purposes of the ordinance are to standardize road improvements for all subdivisions of land, insure an equitable distribution of the cost of road improvements, and improve access to newly developed land commensurate with its eventual use. The ordinance will deal with the provisions and improvements of roads within or contiguous to new subdivisions of land as well as access to and from subdivisions and the County's major road network.

Specific suitability criteria for roads are not addressed in this report given the more in-depth study currently being conducted by the Public Works Department. A general requirement though, as recommended by this report, follows:

Roads - Suitability Criteria,  
Urban and Rural Settlements

All subdivision of land with parcel sizes of less than 20 acres shall have a continuous, improved road (specific standards to be determined later) from the subdivision to an arterial or collector road in the County.

"Fire Protection"

Most communities, including rural areas, provide some type of public fire protection for life and property. Current fire protection services in Calaveras County are provided.

through a complex arrangement of Federal, State and County agencies plus special districts and volunteers.

On behalf of fire insurance companies and as an aid to underwriting fire insurance, communities are graded or classified with respect to their fire defenses and physical characteristics. These classifications are commonly referred to as ISO (Insurance Services Offices) ratings and range from a rating of one to ten. ISO rating 1 is the highest level of fire protection and ISO rating 10 is the lowest level of protection. A rating of 10 virutally represents no organized fire protection at all and a rating of 9 is generally applied to areas without recognizable water supplies. Calaveras County currently ranges in ISO ratings of 7, 8, and 9. A rating of 6 is fairly difficult to attain in rural areas.

The rating of communities upon the ISO scale is dependent upon a fairly extensive point system taking into consideration water supply, fire department capabilities, communications, regulations, hazards, and climate. The availability of an adequate water supply is of course a major consideration.

The following suitability criteria for future urban and rural settlements, regarding fire protection, was developed in conjunction with the California Department of Forestry.

Only when a fire protection system is available or installed to meet the recommended ISO ratings could a proposed development have parcel sizes as the minimum indicated as follows.

Fire Protection - Suitability Criteria,  
Urban and Rural Settlements

<u>ISO Rating</u>	<u>Minimum Parcel Size</u>
8	Less than 20 acres
9	20-40 acres

In order to get an ISO rating of 8, a hydrant or tanker truck system must be available. The hydrant system must be capable of delivering 200 gallons per minute for 20 minutes or 4,000 gallons. Without hydrants, water must be trucked to the site generally in large tanker trucks of 3,000 gallons. Most engine trucks currently operating in the County today do not have such capacities.

In order to get an ISO rating of 9, the delivery of water is also an essential concern but not as stringent as requirements for a rating of 8. Generally, areas of ISO rating 9 would rely upon tanker trucks for the delivery of water instead of fire hydrant systems.

"Schools:

New land developments significantly impact the capacity of school systems, particularly when new lots are built upon quickly.

It has been customary in recent years throughout the nation to require the dedication of school sites within large residential land subdivisions. The County's Subdivision ordinance has such provisions and states that "the (Planning) Commission may at its option or when requested by the Board of Education require dedication of land for the purpose of schools as a condition of approval of a final map...." County Board of Education officials have indicated that at their discretion they would either prefer to accept such school sites or receive financial contributions to mitigate the impact upon schools.

Two school districts within the County, Vallecito School District and Calaveras Unified School District, currently charge an impact fee per new lot created within their districts in order to mitigate the impact of growth upon their schools. The County, in conjunction with the Board of Education, is currently considering provisions for a similar impact fee to be imposed upon building permit applications. Board of Education officials\* have indicated that such financial contributions appear to be more applicable than the formulation of General Plan suitability criteria. Therefore, suitability criteria relative to schools is not recommended in this report.

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\* Meeting between County Planning Department staff and Board of Education officials, July 1, 1980.



## 2. Specific Land Development Uses

Given that the alternative plans and ultimately the General Plan are dealing with over 1,000 square miles of area, it is impossible to map future commercial and industrial uses.

Therefore, the application of suitability criteria, as outlined here, will determine the locations of future commercial and industrial uses in the County. It is important to note that the criteria does not apply to rural home businesses or where a "Community Plan" has been adopted. In those areas where an adopted Community Plan exists, that land use plan and related policies will take precedent over the General Plan suitability criteria for commercial and industrial uses.

### a. Commercial Uses

Commercial uses such as stores, offices, and the like have commonly located near intersections of major travel routes and within town sites. Commercial uses do provide identity to an area especially in regards to towns which already provide a sense of place and activity.

It is conceivable that under the three larger population growth alternatives the identity of existing towns could suffer by indiscriminate commercial development along major roadways. So-called "strip development" along roadways would not only attract future commercial business away from existing town sites but would also

visually change the current rural character of the County. In addition, the free-flow movement of traffic along the major roadways would be inhibited. Therefore, the following suitability criteria would apply to all new commercial development in the County with the exception of rural home businesses and commercial areas lying within towns having an adopted Community Plan.

Future Commercial Uses - Suitability Criteria

- All new commercial development shall have direct access to a State Highway or major County road.
- All new commercial development shall be within the following radius of the center of an existing town site:

<u>Large Towns</u>	1/2 mile radius
(Arnold, Murphys, Valley Springs, San Andreas, Mokelumne Hill, and West Point)	

<u>Small Towns</u>	1/8 mile radius
(All others)	

Exceptions to these requirements would be where commercial uses are providing speciality goods and services such as to recreational areas. Also, new town sites are conceivable under the larger population growth alternatives. In this situation a "planned development" commercial center would preclude compliance with the previous suitability criteria.

b. Industrial Uses (including Mineral Processing but excluding small rural home businesses and industries) Industrial uses vary significantly in type and, in turn, the requirements they demand also vary for locating and operating in any particular place. Some of the more common industrial requirements include generally flat land, access to major transportation route (sometimes including rail facilities), availability of labor markets, access to raw materials, and availability of public facilities and services such as water. Also the availability of energy is recently playing a large part in industrial location decision-making.

Given the multitude of requirements for various industry types, specific suitability criteria for future industrial uses were not developed. Instead, industrial uses are designated by a "floating zone" (described further in Section VI of this report) whereby specific industrial locations are not mapped until a prospective industry shows interest in locating within the County and meets certain basic development standards. In other words, future industrial uses would be handled and reviewed upon a case-by-case basis.

## VI. IMPLEMENTATION TECHNIQUES

This section of the report focuses upon some primary means of implementing the alternative plans or eventually the General Plan itself. This section does not attempt to relate the various implementation techniques specifically to any one of the alternatives but rather provides an overview of available techniques of implementation.

Four main types of implementation techniques are explored, namely: taxation programs, expenditure programs, regulatory programs, and organizational opportunities.

Each of these program and opportunity areas include: sub-sections of Purpose and Scope, Applicability, and Primary Techniques. The "Purpose and Scope" sub-section basically defines and describes the program area. The "Applicability" sub-section discusses how the program area might be used in the implementation of the General Plan. The "Primary Techniques" sub-section briefly highlights some existing and new means of implementation being used either in the County today or throughout the United States.

### A. Taxation Programs

#### 1. Purpose and Scope

The primary purpose of taxation programs is the generation of public revenues. These revenues are used in the delivery of public facilities and services. Some examples of taxation programs that generate revenues are the property tax, sales tax, impact fees, user fees, and special assessments.

Taxation programs also can be used for incentives to private sector activities. The primary purpose of taxation programs



in this regard is to guide the private sector toward the realization of public goals and objectives. Some examples of taxation programs that provide incentives are preferential tax treatments and tax credits.

## 2. Applicability

In terms of implementing the General Plan, taxation programs can probably be best utilized as incentives rather than focusing upon the complex revenue generating aspects of taxation.

The use of taxation has been and will likely continue to be a major funding source for County government and the special districts which deliver public facilities and services to Calaveras County. Due to the uncertainty of the entire local government financing picture over the long-term, it is impossible to discuss revenue generation within the context of the General Plan.\*

Therefore, the following discussion of primary implementation techniques focuses upon taxation programs as incentives.

## 3. Primary Techniques

Two preferential taxation programs of major importance to the General Plan now exist within the State of California and are currently used within the County. Each program allows taxation of the production gained from the land rather

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\* Service Sector Analysis, EDAW Inc., May, 1980

than its assessed market value. One program, the California Land Conservation Act, deals with agricultural lands while the other program, the Timber Yield Tax Law, deals with timber producing lands. Each Act allows farming or timber harvesting to continue in the face of increasing land values which are responding to demand for urban and rural land subdivision.

#### "Agricultural Preserves"

The California Land Conservation Act, often referred to as the Williamson Act, permits cities and counties to establish agriculture preserves. The Agricultural preserves are lands which can produce food or fiber and, therefore includes grazing as well as crop lands. Also, lands devoted to recreation and open space uses such as wildlife habitats are eligible for an agricultural preservation designation. Each parcel of land within an agricultural preserve must be at least 100 acres in size unless the county or city finds it necessary, due to unique characteristics of the agricultural enterprises in the area, to establish preserves less than 100 acres. The County currently requires a minimum acreage size of 50 acres and a gross annual value of production of \$2,000.00 per agricultural preserve contract. Contracts are let for 10 years or longer and are renewed annually. If lands are to be taken out of an agricultural preserve, the taxes are raised gradually so that they equal the assessed market value at the end of the contractual term.

The County's current regulations regarding agricultural preserves, namely minimum parcel size and annual value of production, may not fulfill to its best ability the intent of the California Land Conservation Act. In some cases agricultural preserves may serve as a mere tax shelter and are not necessarily preserving prime agricultural and grazing lands over the long-term nor are encouraging the full production of food or fiber on these lands. Also, the County's current regulations do not take into consideration the type of food or fiber being produced (such as grapes, orchard crops, open grazing, etc.) and their particular land requirements and production values. A more equitable system may include a sliding scale of minimum parcel size and production value requirements which are related to specific types of food and fiber production.

#### "Timberland Protection Zone (TPZ)"

The Timber Yield Tax Law, formed by the Z'Berg-Warren-Keine-Collier Forest Taxation Reform Act, allows similar tax incentives to the growing and harvesting of timber as the California Land Conservation Act does for agricultural lands. The County currently requires a minimum acreage size of 160 acres for lands under a TPZ. There are no annual production value requirements because this responsibility is handled by the State of California. Contracts are let

for a period of 10 years or longer as in agricultural preserves.

#### "Additional Tax Incentives"

Conceivably the County could offer additional tax incentives beyond those provided for in the California Land Conservation Act and the Timber Yield Tax Law. Since property tax (Proposition 13) requirements are established by State law, such additional tax incentives would be more likely focused toward user fees and special assessments. A reduction or exemption from these types of fees and assessments could be offered as an incentive to the private sector which actively pursues the realization of General Plan goals and policies.

### B. Expenditure Programs

#### 1. Purpose and Scope

The purpose of public expenditure programs is the acquisition, development, and maintenance of public property and the delivery of public facilities and services. Some examples of public expenditure programs include roadway improvements, utility extensions, and park development.

#### 2. Applicability

In terms of implementing the General Plan, expenditure programs are applicable primarily in two respects. First, the availability of public improvements (such as roads, water, and



sewer systems) can encourage and influence the location of future growth. This is especially true when sufficient public facilities and services are required as part of the development review process. Secondly, expenditure programs are necessary for the acquisition of public lands.

### 3. Primary Techniques

The following discussion of primary implementation techniques focuses first upon expenditure programs which deal with public improvements and secondly with public management of lands.

#### "Public Improvements"

The expansion and improvement of public facilities provided by County government and the more than 60 special districts within the County could influence to a large extent the rate and location of future growth in the County. New developments' compliance with the suitability criteria presented in the previous section of this report would largely be dependent upon the availability of such public facilities and services.

A main concern with public improvement expenditures serving as an inducement to growth is the role of special districts within the broader General Plan implementation process. The expansion and improvement of special district facilities and services should be planned in accordance with the policies of the General Plan, rather than district capacities

dictating the extent and location of future growth in the County (This aspect of implementation is further discussed under "organizational opportunities" in this section of the report).

#### "Public Land Management"

The public management of land provides one of the best assurances that special lands will be maintained with the public interest in mind. Examples of such land includes recreational lands and open space lands such as significant botanical and wildlife areas.

The public management of these lands can be assured primarily through three methods of public acquisition. The first method is fee - simple acquisition which involves acquiring full title to the land for public purpose. This method allows the greatest opportunity of managing the use of the land but also is the most expensive form of acquisition. The second method involves less than fee - simple acquisition. This method acquires certain rights to the property (normally development rights) and allows continued private use of the land. Less than fee - simple acquisition normally results in less acquisition costs. The third method, known as "Development Rights Transfers" (TDRs), secures public lands without the use of public monies.

TDR's operate under a system by which all land-owners are given development rights. Then, based upon a General Plan map, areas are designated as development and non-development areas. An owner in a non-development area (such as open space lands) may sell his rights through a market mechanism to an owner located in a development area who has fewer required rights than he needs in order to develop. The concept is that through the selling of development rights the non-development landowner will be equitably compensated for for the governmental restriction placed upon his land without the expenditure of public funds. In short, TDR's could allow the preservation of open space lands without the use of public monies. The inherent advantages of TDR's are impressive and the challenges posed by its implementation are no less difficult.

C. Regulatory Programs

1. Purpose and Scope

The primary purpose of regulatory programs is for the protection and promotion of public health, safety, and welfare. Regulatory programs must be within the powers given local governments by the California Constitution and State statutes.

2. Applicability

In terms of the General Plan, regulatory programs have been the

most commonly employed implementation technique. Zoning, the most wide known and traditionally used technique, in recent years has been expanded to include a number of variations. Conventional zoning as well as more modern zoning variations will probably continue to be the major means of implementing General Plans. State law requires that zoning be consistent with the General Plan.

### 3. Primary Techniques

The following discussion of regulatory implementation techniques focuses upon the use of conventional zoning as well as some new zoning approaches that could be used during implementation of the County's General Plan. Because of the multitude of zoning approaches used throughout the nation and their individual variations, only the broader aspects of these programs are highlighted.

Zoning is used to regulate the use of land and buildings, the size of land subdivisions or density of development, the area of the lot that may be developed, and the height and bulk of structures. Conventional zoning has tended to restrict its regulation to these purposes. New zoning techniques have sought also to add timing and flexibility considerations into the zoning process.

A brief description of some of the more distinctive new zoning techniques follows: At this time, it is not known if any of these new zoning techniques will need to be used for implementation of the County's new General Plan.



"Performance" zoning employs a set of standards relating to acceptable levels of nuisance or side effects of a development rather than specifying specific uses.

"Incentive" zoning involves the granting of additional income generating benefits (such as small lot sizes) to the developer in exchange for public features or amenities (such as park facilities).

A "Floating" zone employs the use of criteria to be met even though the specific location of zone is not identified in advance.

"Phased Zoning" employs the use of timing development generally in accordance with the availability of services.

"Contract" zoning represents a commitment on the part of the local government to rezone property in exchange for

#### D. Organizational Opportunities

##### 1. Purpose and Scope

The primary purpose of organizational opportunities is the coordination and cooperation of public decision-making entities. These entities would include County government, incorporated cities, and special service districts and agencies.

##### 2. Applicability

In terms of the General Plan and its implementation, the cooperative effort among public entities is essential. Because of the growth-inducing impacts of some special districts, it is of paramount importance that their individual goals and objectives be consistent with rather than contrary to those

of the County General Plan.

### 3. Primary Technique

With county government providing general purpose public facilities and services and over 60 separate districts and agencies providing special purpose public facilities and services in the County, the need of coordination among these entities is apparent. With the passage of the Municipal Organization Act of 1977 (MORGA), a means of coordinating governmental and district decisions is available through the Local Agency Formation Commission (LAFCO).

LAFCO, in Calaveras County's situation is comprised of two appointed members of the County Board of Supervisors, one appointed City official from Angels, and two members representing the general public, appointed by the other three members of the commission.

The principal powers and duties of LAFCO are to act upon the incorporation of cities, the formation of special districts, and the annexation of territory to local agencies.

In regards to special districts and agencies, LAFCO may adopt rules and regulations affecting the functions and services of these districts and agencies within the County.

The rules and regulations can establish the nature, location and extent of any functions provided by the districts but cannot regulate the extension or enlargement of these services within the existing boundaries of the district.

## APPENDIX - "Assumptions and Methodology for projecting Future Traffic Assignments"

CALTRANS, in conjunction with the County Planning Department, developed roadway networks for alternative land capability maps 1 and 4. The assumptions and methodology used in determining the required network follows:

### Assumptions

- All traffic zones within the County were self-contained. That is to say, all employment and shopping were assumed to take place in all the zones throughout the County and not just in a few zones.
- Trip exchanges between zones were assumed to be the same ratio as developed for the 1995 sub-State traffic model.
- Intrazonal trips would be evenly split between the major roadway network and new roads built as a result of future developments.

### Methodology

Step 1: The 1995 single and multiple dwellings units used in the 1975 Regional Transportation Plan for each traffic zone was modified to reflect the number of dwelling units in alternatives 1 and 4.

Step 2: A square trip table was prepared based on the 1995 sub-State traffic model and modified by the factors developed in Step 1 to develop trips for alternatives one and four.

Step 3: A triangle trip table was developed from the trips shown on the square table.

Step 4: A network map was prepared of roads connecting all traffic zones and the links numbered (a total of 75 links was used).

Step 5: A trip assignment table was set up with a column for each link (75) across the top and the zone to zone trip exchange listed down the left side. Then manually trips were assigned to those links traveled for zone to zone. After this was completed for all zones, the link column was added to determine the total traffic ADT - Average Daily Traffic - for each link.

Step 6: The ADT counts were then placed on each link of the network. This showed the interzonal travel on each link in the network.

Step 7: 50% of the intrazonal trips were assigned to the links in each zone.

Step 8: From the trips (ADT) shown on the network maps, the type of roads required were determined for alternatives one and four.







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